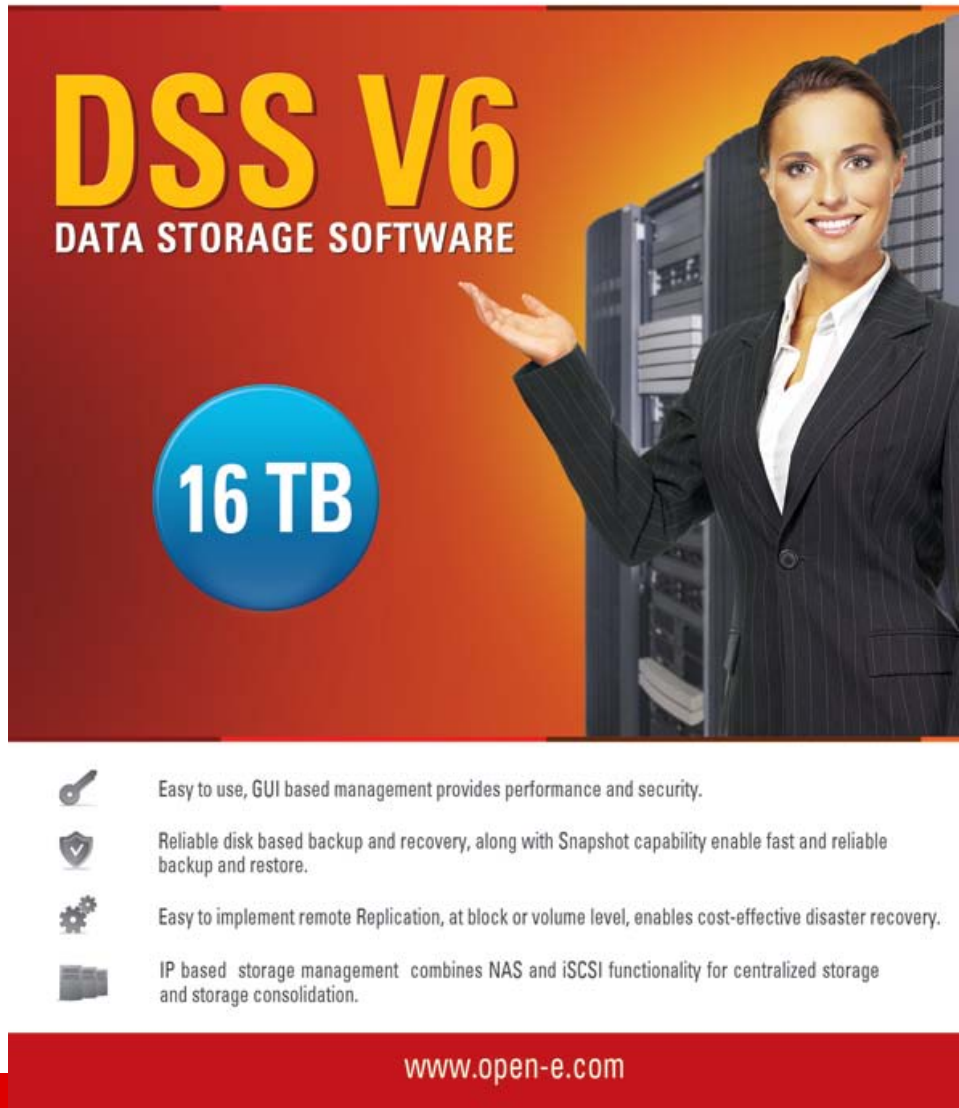
Replication Solutions with Open-E Data Storage Server (DSS V6)

Software Version: DSS ver. 6.00 up85

Presentation updated: September 2011



Replication Solutions Supported by Open-E DSS

	Replication Mode		Source/Destination			Data Transfer		Volume Type			
									iSCSI		
	Synchronous	Asynchronous	w/ System	LAN	WAN	File based	Block based	NAS	File-IO	Block-IO	FC
Asynchronous Data (File) Replication within the system		✓	✓			✓		✓			
Asynchronous Data (File) Replication over a LAN		✓		✓		✓		✓			
Asynchronous Data (File) Replication over a WAN		✓			✓	✓		✓			
Synchronous Volume Replication over a LAN	✓			✓			✓	✓	✓	✓	✓
Synchronous Volume Replication over a WAN	✓				✓		✓	✓	✓	✓	✓

Replication Solutions Supported by Open-E DSS

- Open-E DSS supports three different types of *file based* Data (File) Replication
  - Asynchronous Data (File) Replication within the system
  - Asynchronous Data (File) Replication over a LAN
  - Asynchronous Data (File) Replication over a WAN

- Additionally, DSS Supports two types of *block based* Volume Replication,
  - Synchronous Volume Replication over a LAN for NAS, iSCSI and Fibre Channel appliances,
  - Synchronous Volume Replication over a WAN for NAS, iSCSI and Fibre Channel appliances,

Data (File) Replications

Replication Solutions Supported by Open-E DSS

	Replication Mode		Source/Destination			Data Transfer		Volume Type			
									iSCSI		
	Synchronous	Asynchronous	w/ System	LAN	WAN	File based	Block based	NAS	File-IO	Block-IO	FC
Asynchronous Data (File) Replication within the system		✓	✓			✓		✓			
Asynchronous Data (File) Replication over a LAN		✓		✓		✓		✓			
Asynchronous Data (File) Replication over a WAN		✓			✓	✓		✓			

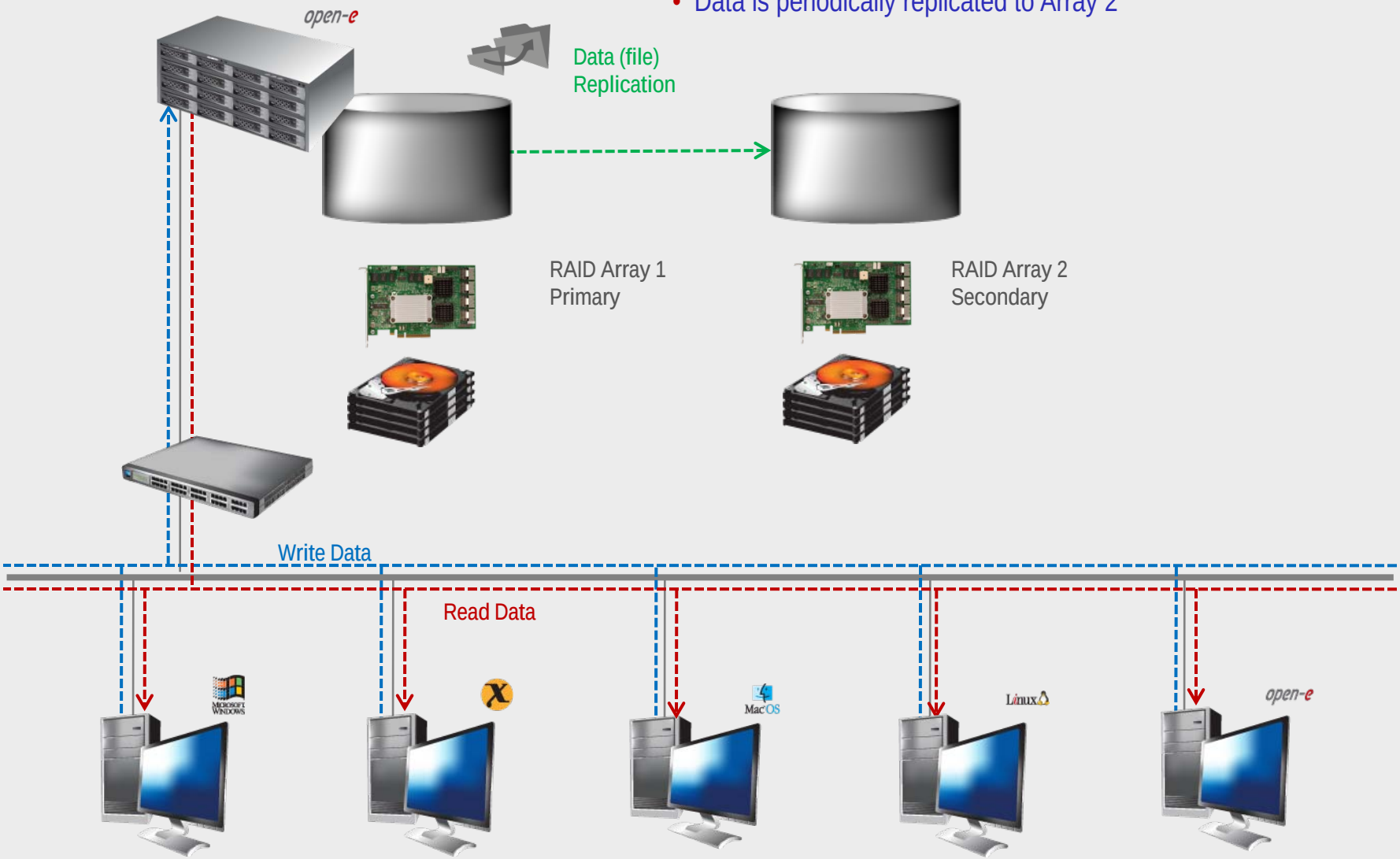
- **Open-E Data (File) Replication** enables asynchronous file and folder copy from one storage system to another for maximum data availability.
  - With Asynchronous Replication a point-in-time snapshot copy of data on the source is made and copied to the target storage system.
  - For maximum flexibility, you can run a data replication task in two directions: one system can be both a source and a destination at the same time, allowing cross data backups on several systems. Replication can be used for disaster recovery or disk-to-disk backup.

REPLICATION BETWEEN TWO RAID ARRAYS WITHIN ONE SYSTEM

- Recommended Resources
  - Key Hardware
    - ✓ x86 compatible
    - ✓ RAID Controller 1
    - ✓ RAID Controller 2
    - ✓ HDD's
    - ✓ Network Interface Cards
  - Software
    - ✓ Open-E DSS
- Benefits
  - Data redundancy over RAID Array
  - Local data availability
  - Low cost solution
- Disadvantages
  - In case of complete system failure data will be lost or inaccessible

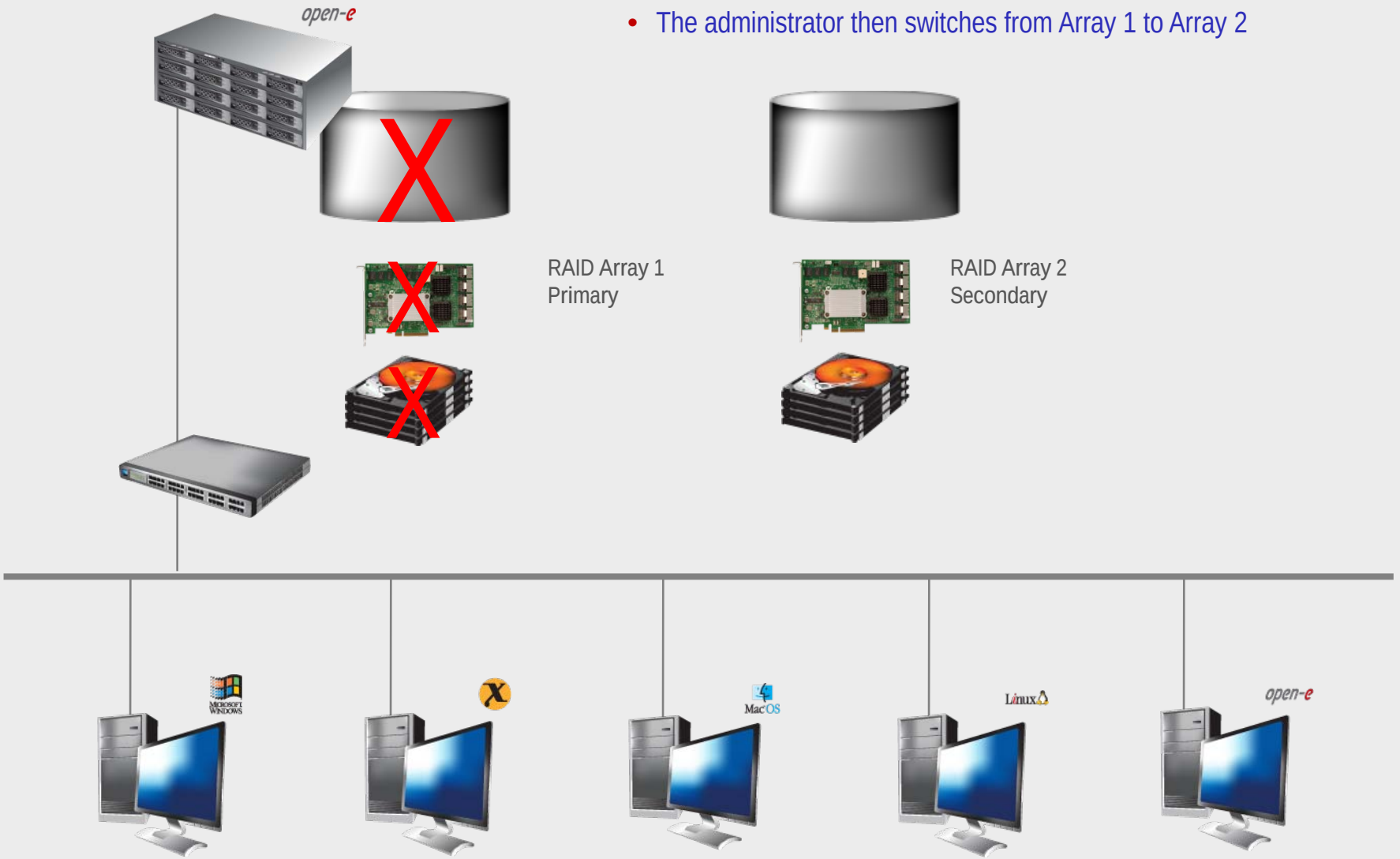
Asynchronous Data (File) Replication within the System

- Data is written and read on Array 1
- Data is periodically replicated to Array 2



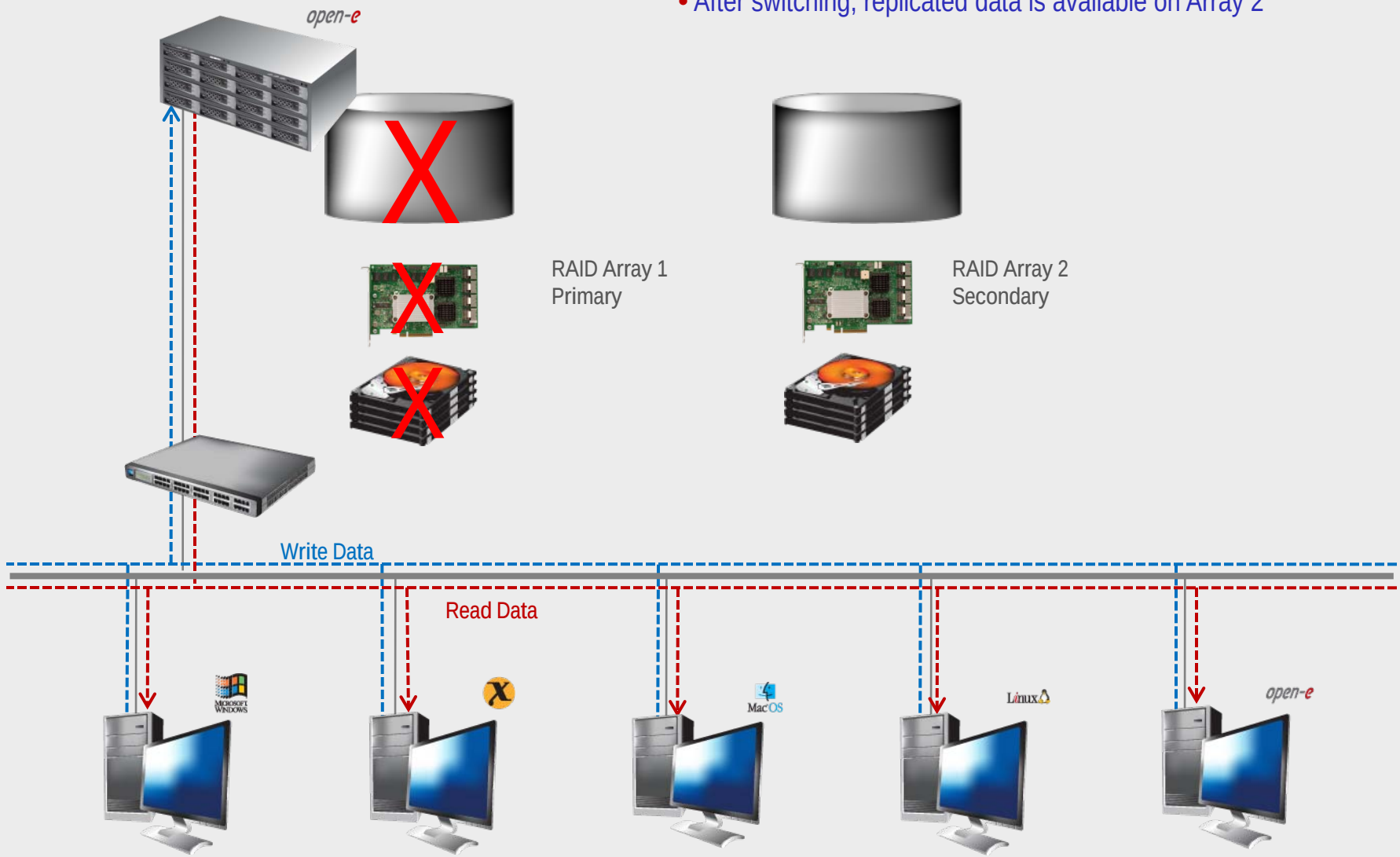
Asynchronous Data (File) Replication within the System

- In the case of a raid array or disk drive error on Raid Array 1, the server will send an e-mail notification to the administrator and/or users
- The administrator then switches from Array 1 to Array 2



Asynchronous Data (File) Replication within the System

- After switching, replicated data is available on Array 2

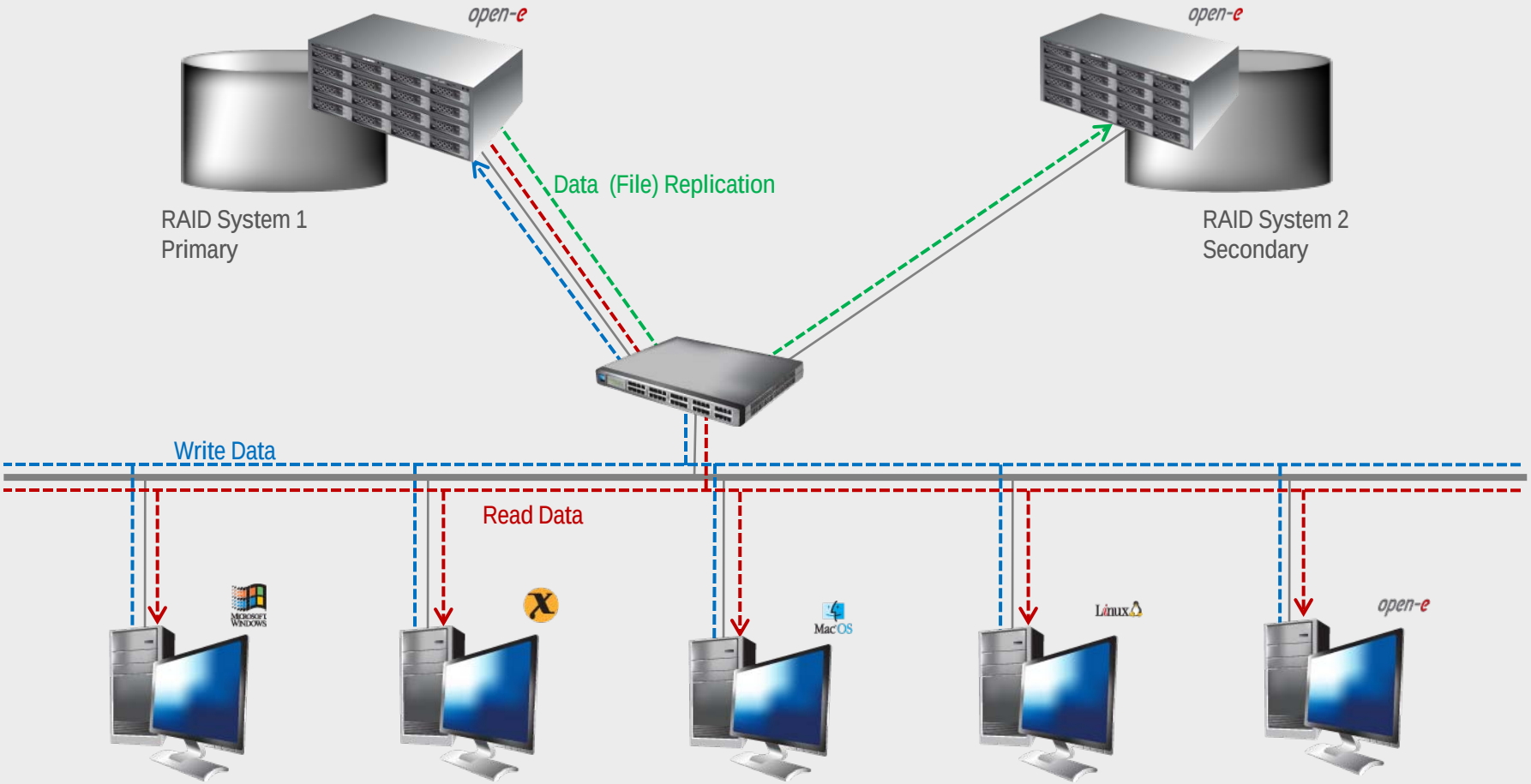


REPLICATION BETWEEN TWO SYSTEMS WITHIN A SINGLE LAN

- Recommended Resources
  - Key Hardware (two systems)
    - ✓ x86 compatible
    - ✓ RAID Controller
    - ✓ HDD‘s
    - ✓ Network Interface Cards
  - Software
    - ✓ Open-E DSS, 2 units
- Benefits
  - Data Redundancy over a LAN
  - Local data availability
- Disadvantages
  - Natural disasters can destroy both machines
  - Higher cost of solution

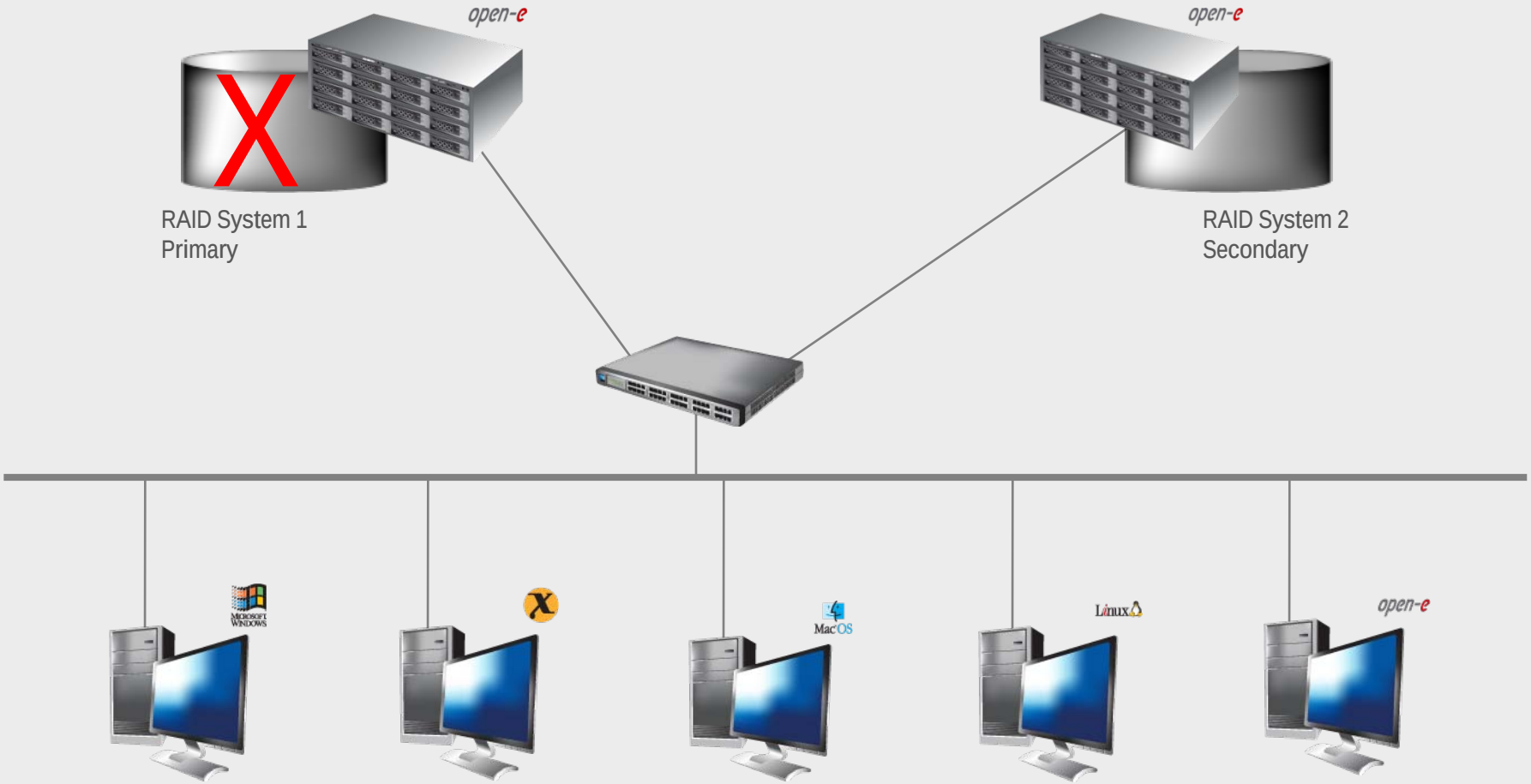
Asynchronous Data (File) Replication over a LAN

- Data is written and read on System 1
- Data is periodically replicated from System 1 to System 2 over the LAN



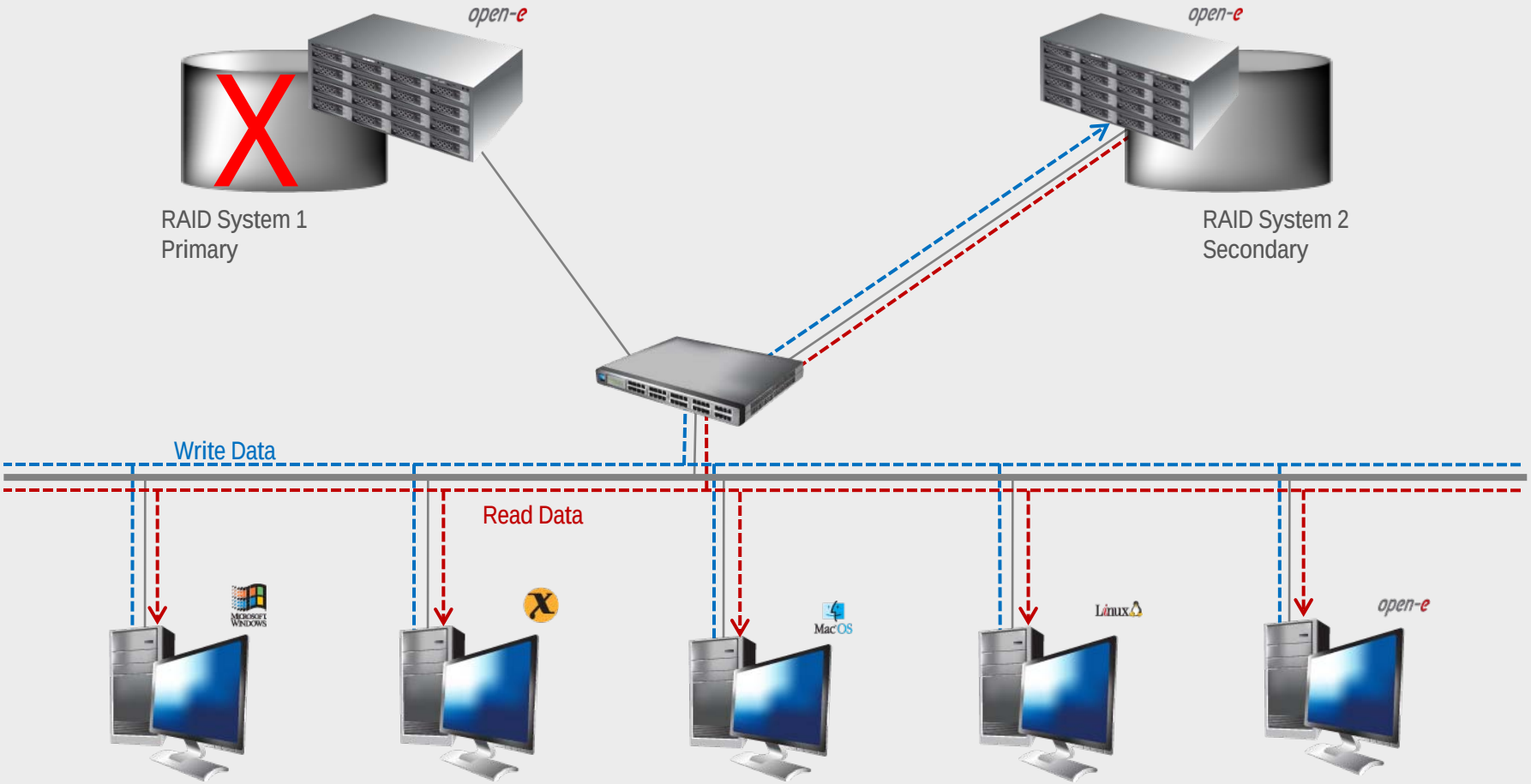
Asynchronous Data (File) Replication over a LAN

- In the case of a raid array or disk drive error on System 1 the system will send an e-mail notification to the administrator
- Administrator then switches users to System 2



Asynchronous Data (File) Replication over a LAN

- After switching, replicated data is available on System 2

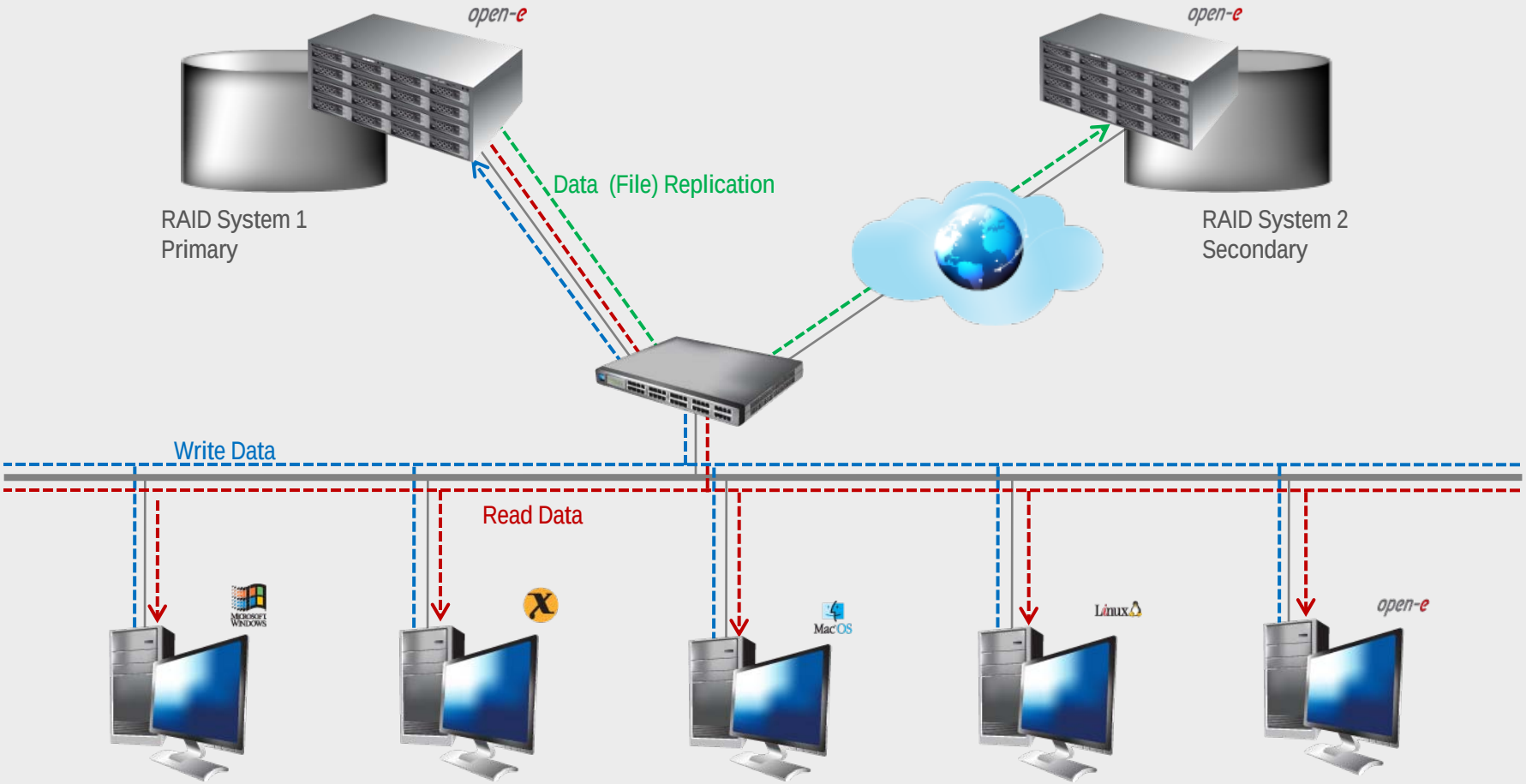


Replication between two systems over a WAN

- Recommended Resources
  - Key Hardware (two system)
    - ✓ x86 compatible
    - ✓ RAID Controller
    - ✓ HDD‘s
    - ✓ Network Interface Cards
  - Software:
    - ✓ Open-E DSS, 2 units
- Benefits
  - Data redundancy
  - Maximum data safety
- Disadvantages
  - Higher cost of WAN solution

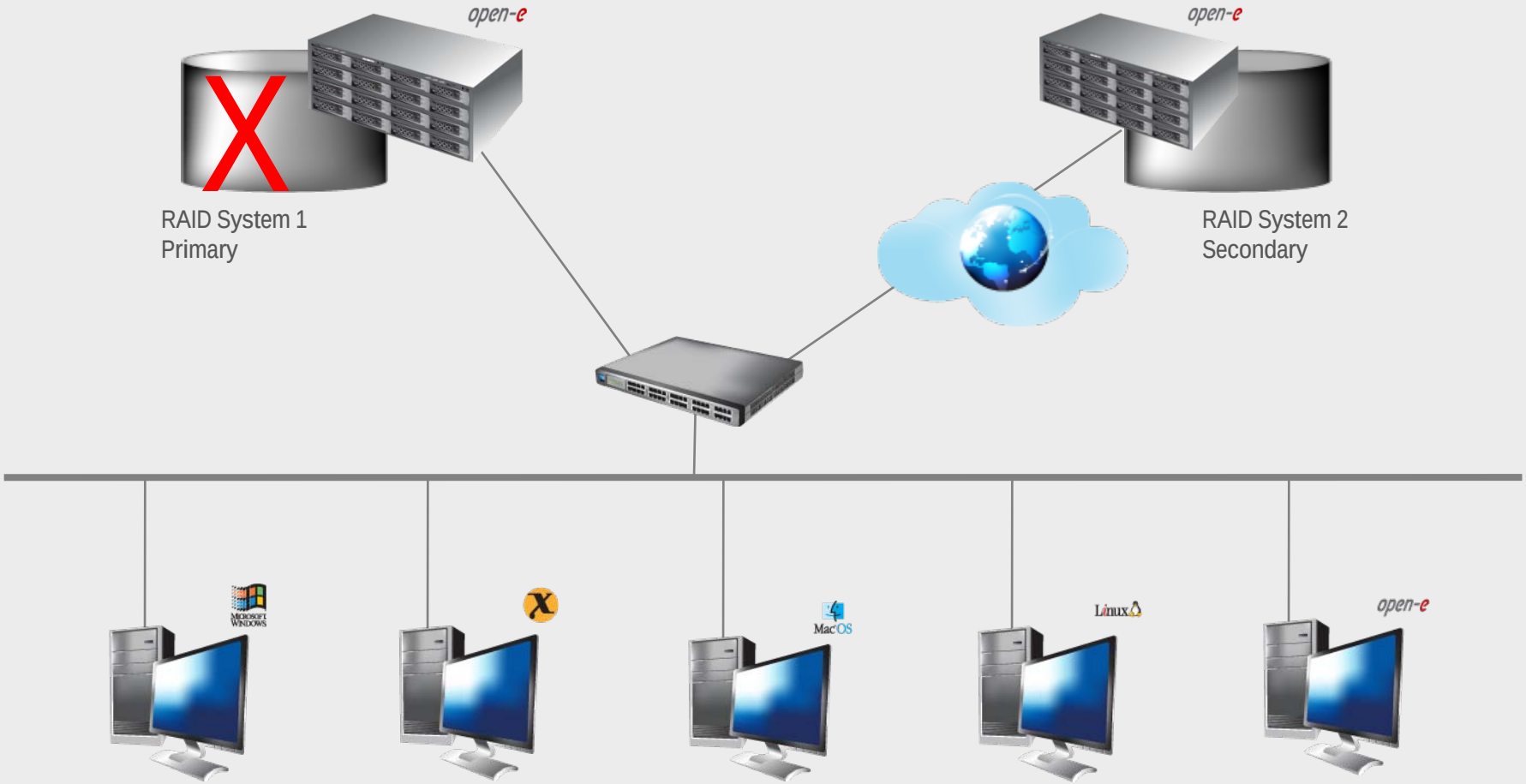
Asynchronous Data (File) Replication over a WAN

- Data is written and read on System 1
- Data is periodically replicated to System 2 via an Internet connection



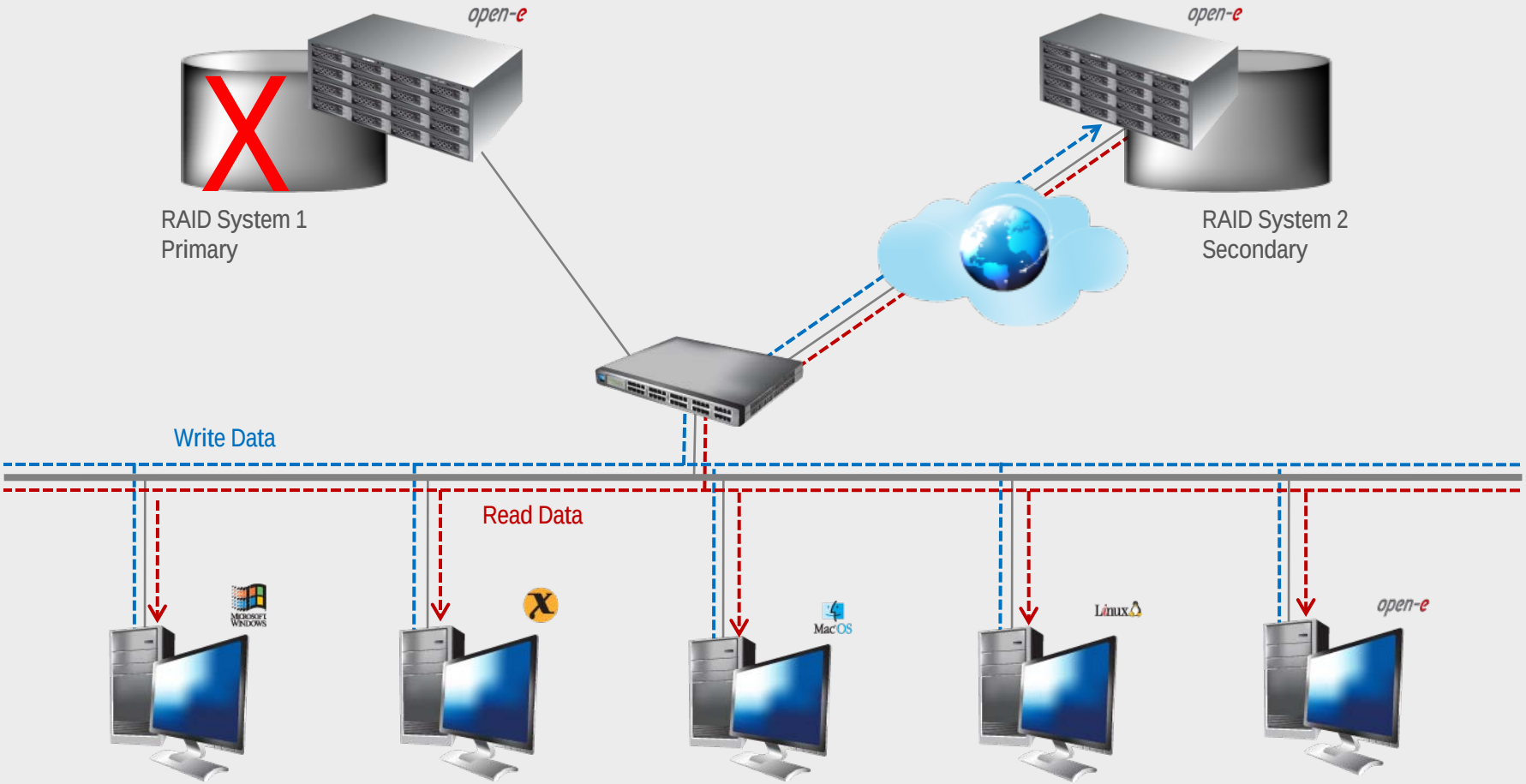
Asynchronous Data (File) Replication over a WAN

- In the event of a raid array or disk drive error on System 1, the server will send an e-mail notification to the administrator,
- In the event of a loss of system 1 users will be notified
- Administrator then switches users to System 2 over the WAN.



Asynchronous Data (File) Replication over a WAN

- After switching, replicated data is available on System 2



Volume Replications

Replication Solutions Supported by Open-E DSS

	Replication Mode		Source/Destination			Data Transfer		Volume Type			
									iSCSI		
	Synchronous	Asynchronous	w/ System	LAN	WAN	File based	Block based	NAS	File-IO	Block-IO	FC
Synchronous Volume Replication over a LAN	✓			✓			✓	✓	✓	✓	✓
Synchronous Volume Replication over a WAN	✓				✓		✓	✓	✓	✓	✓

Volume Replication (synchronous) over LAN or WAN is block based and supports iSCSI, FC and NAS logical volumes. It provides data availability in case the source system is offline due to a disaster. The destination system will have the replicated data from the source server.

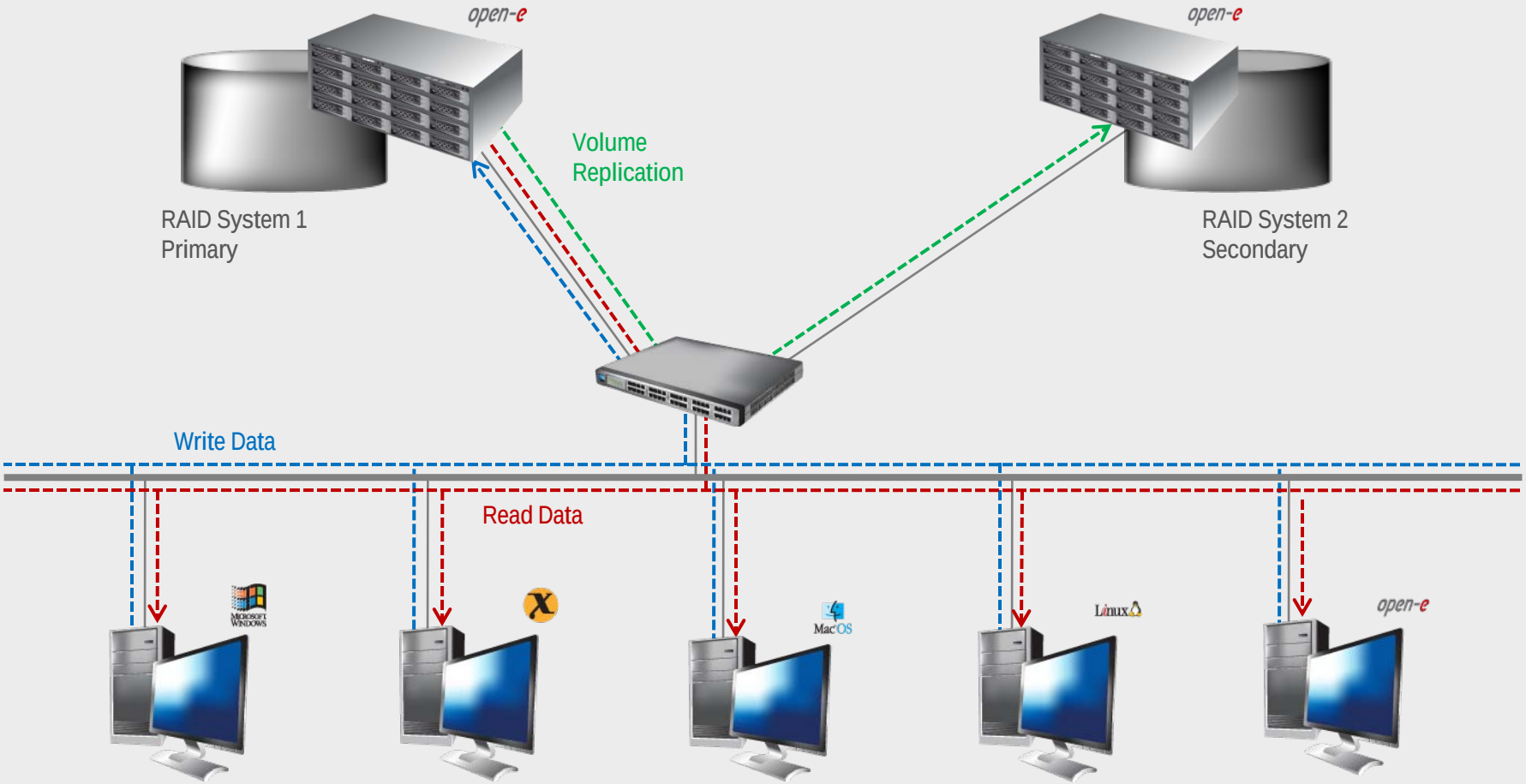
Synchronous Volume Replication over a LAN

REPLICATION BETWEEN TWO SYSTEMS WITHIN ONE LAN

- Recommended Resources
  - Key Hardware (two systems)
    - ✓ x86 compatible,
    - ✓ RAID Controller,
    - ✓ HDD‘s,
    - ✓ Network Interface Cards.
  - Software
    - ✓ Open-E DSS, 2 units.
- Benefits
  - Data Redundancy over a LAN,
  - Enables continuous data access.
- Disadvantages
  - Higher cost of solution,
  - Natural disasters can destroy both local systems.

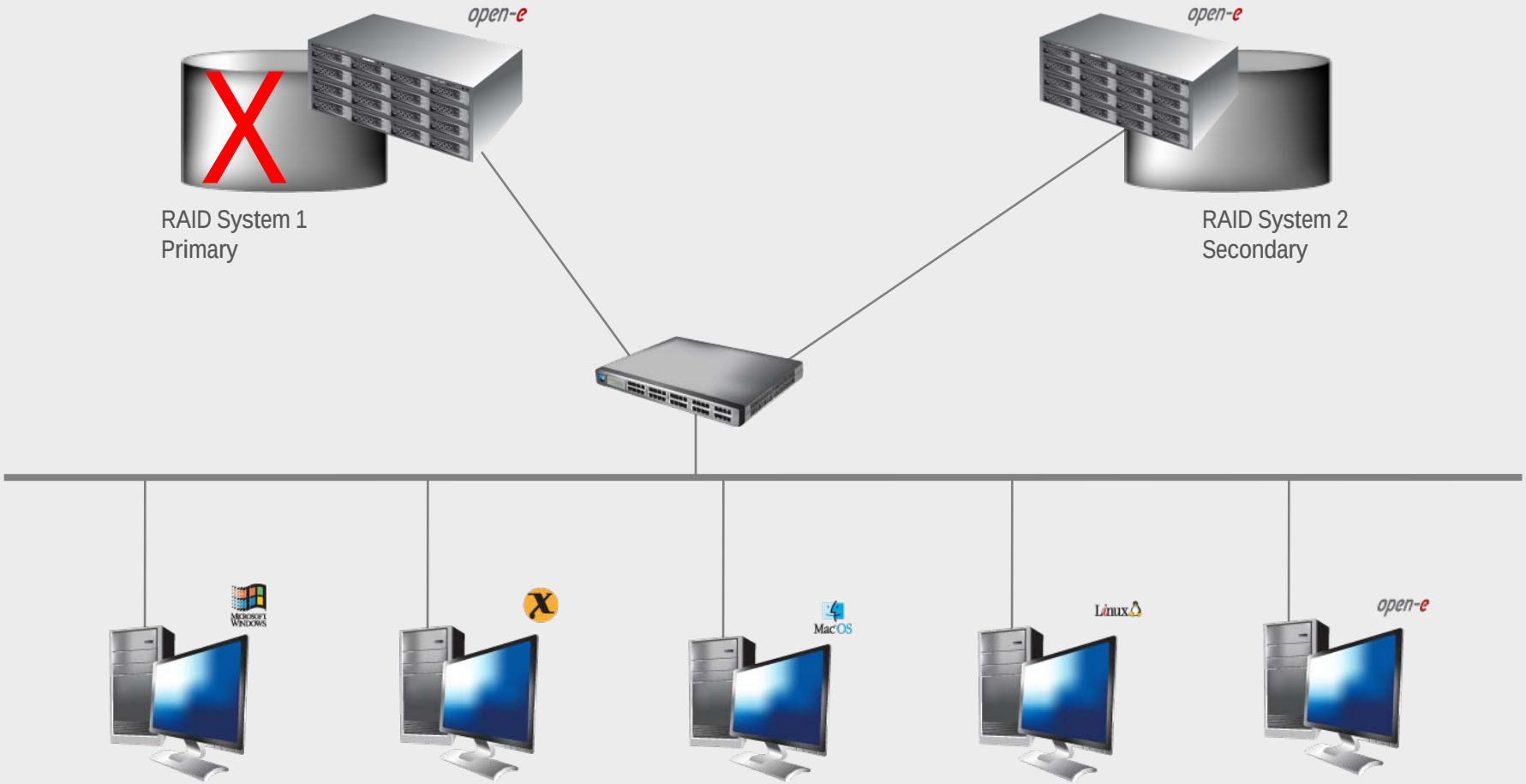
Synchronous Volume Replication over a LAN

- Data is written and read on System 1
- Data is continiously replicated to System 2



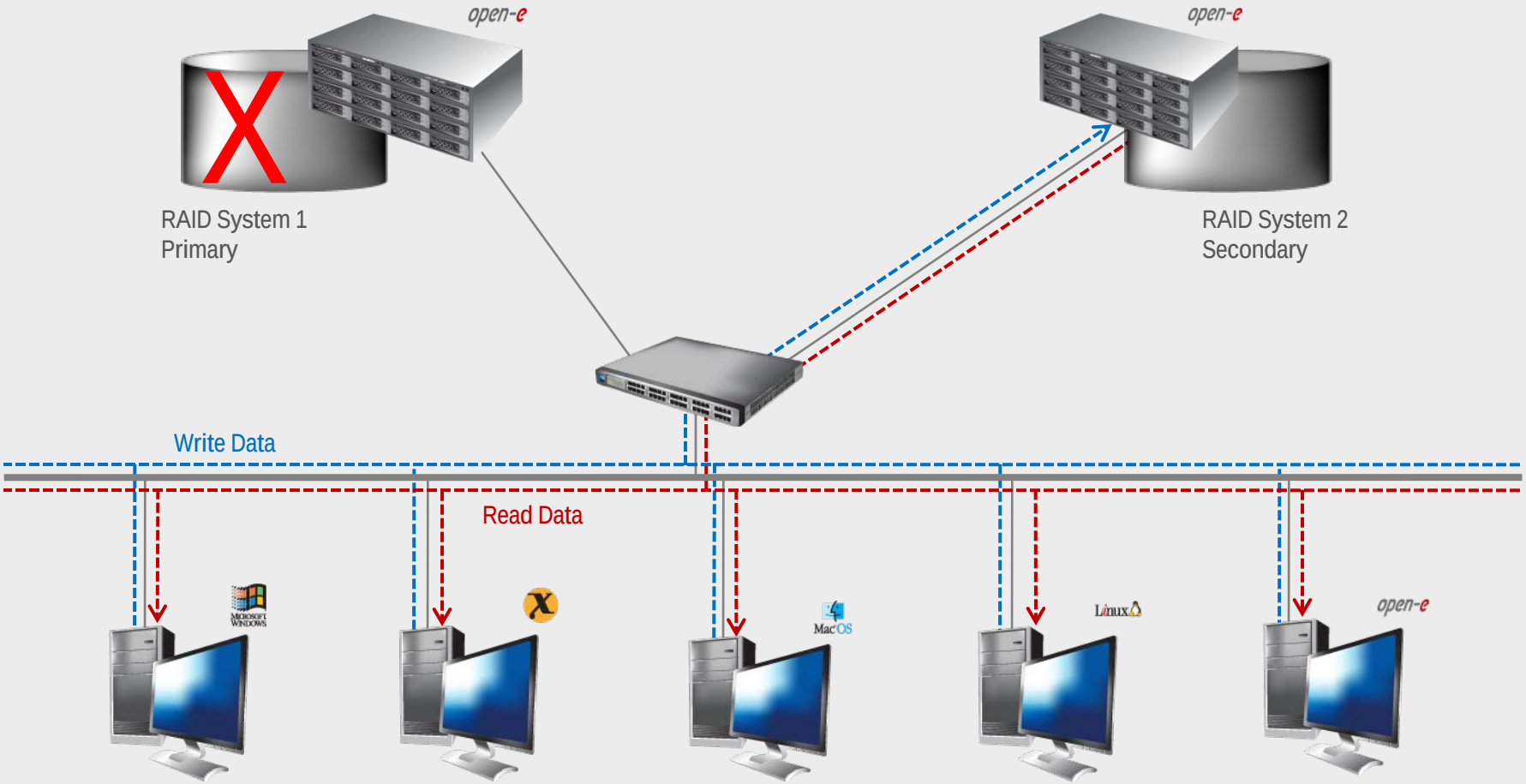
Synchronous Volume Replication over a LAN

- In the case of a raid array or disk drive error on the System 1, the server will send an e-mail notification to the administrator,
- In the case of a failure of system 1, users will be notified
- Administrator then switches users to the System 2.



Synchronous Volume Replication over a LAN

- After switching, replicated volume is available on System 2

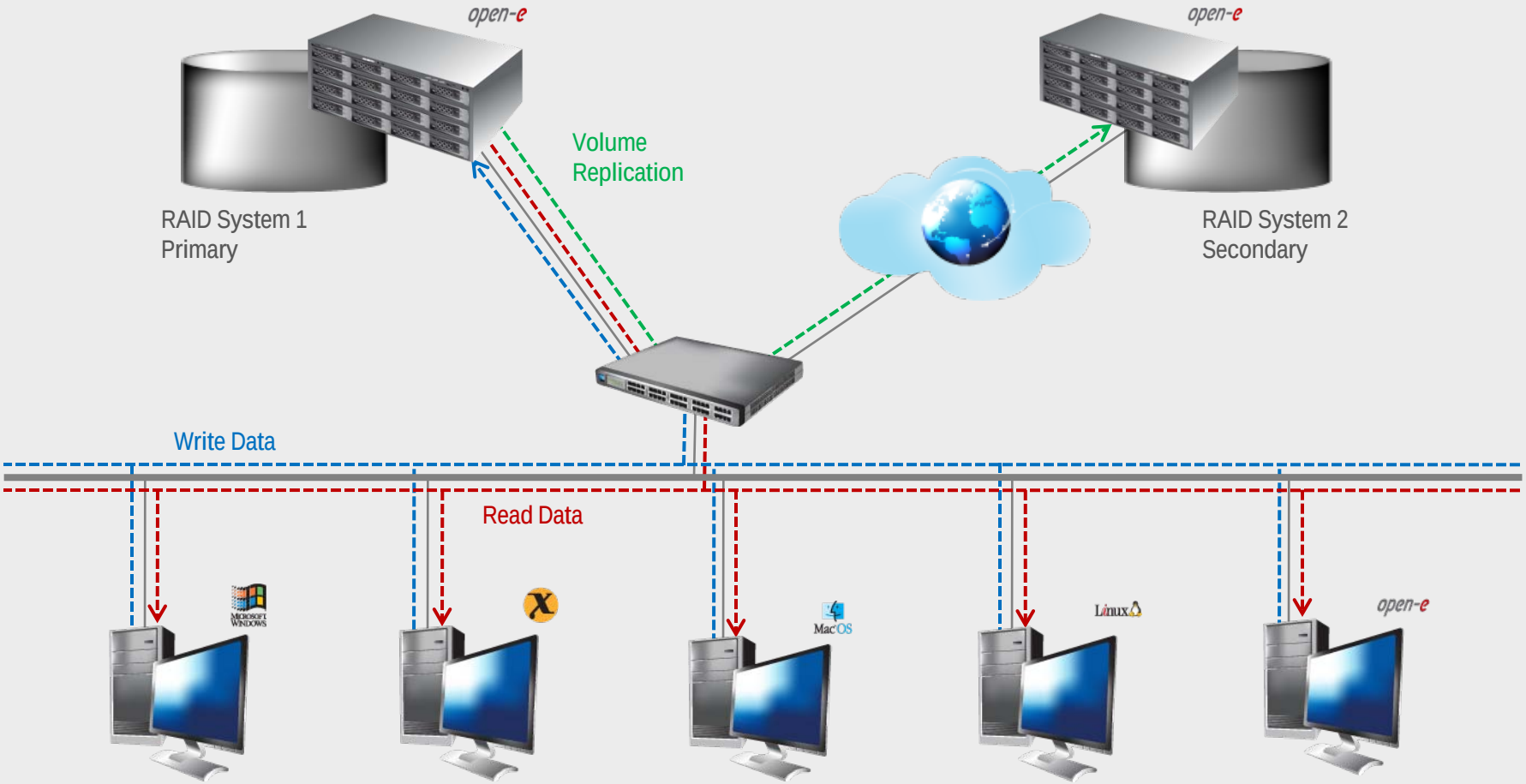


Replication between two systems over a WAN

- Recommended Resources
  - Key Hardware (two systems)
    - ✓ x86 compatible,
    - ✓ RAID Controller,
    - ✓ HDD's,
    - ✓ Network Interface Cards.
  - Software
    - ✓ Open-E DSS, 2 units.
- Benefits
  - Data redundancy
  - Maximum data safety
- Disadvantages
  - Higher cost of WAN solution

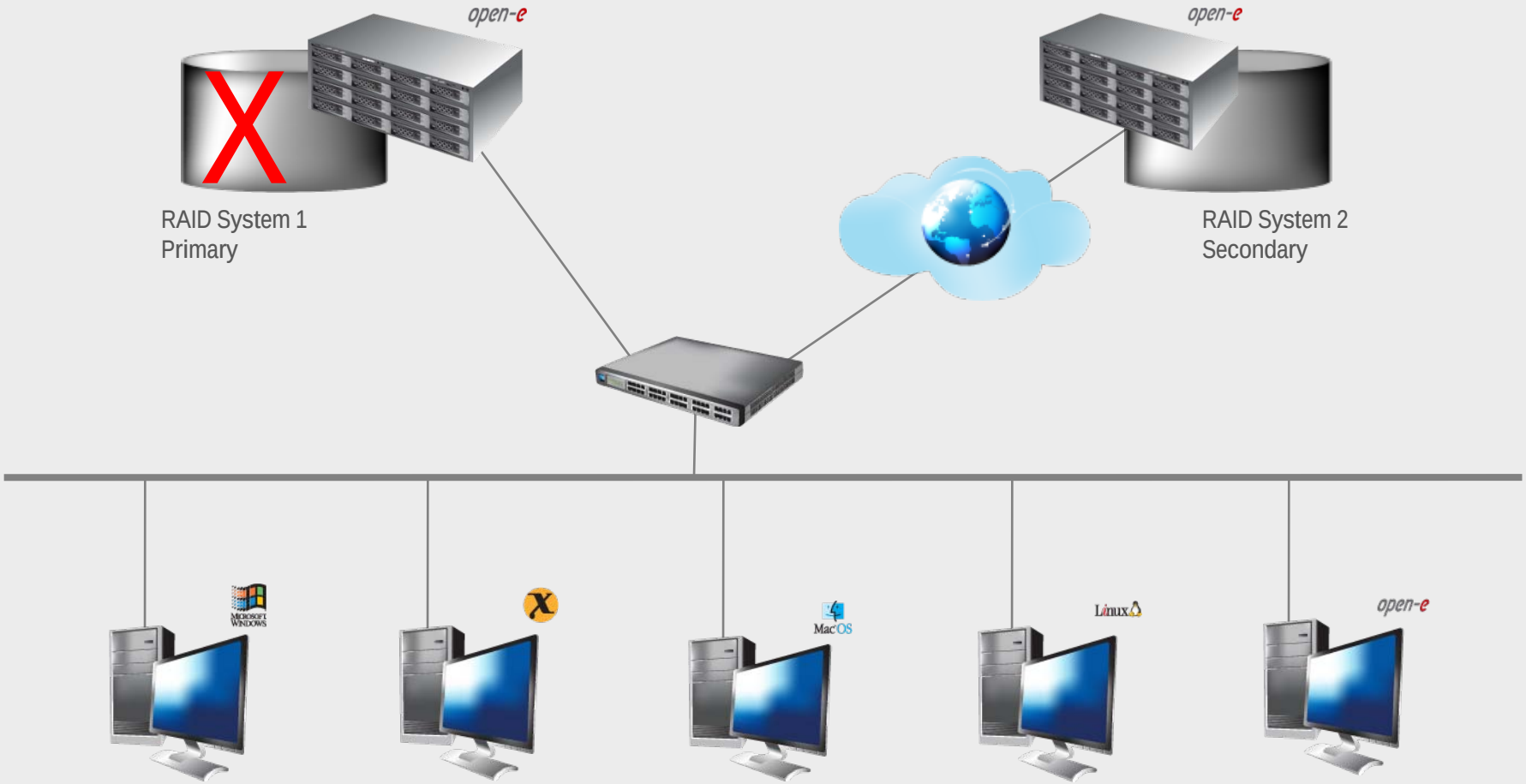
Synchronous Volume Replication over a WAN

- Data is written and read on System 1
- Data is replicated to System 2 via an Internet connection



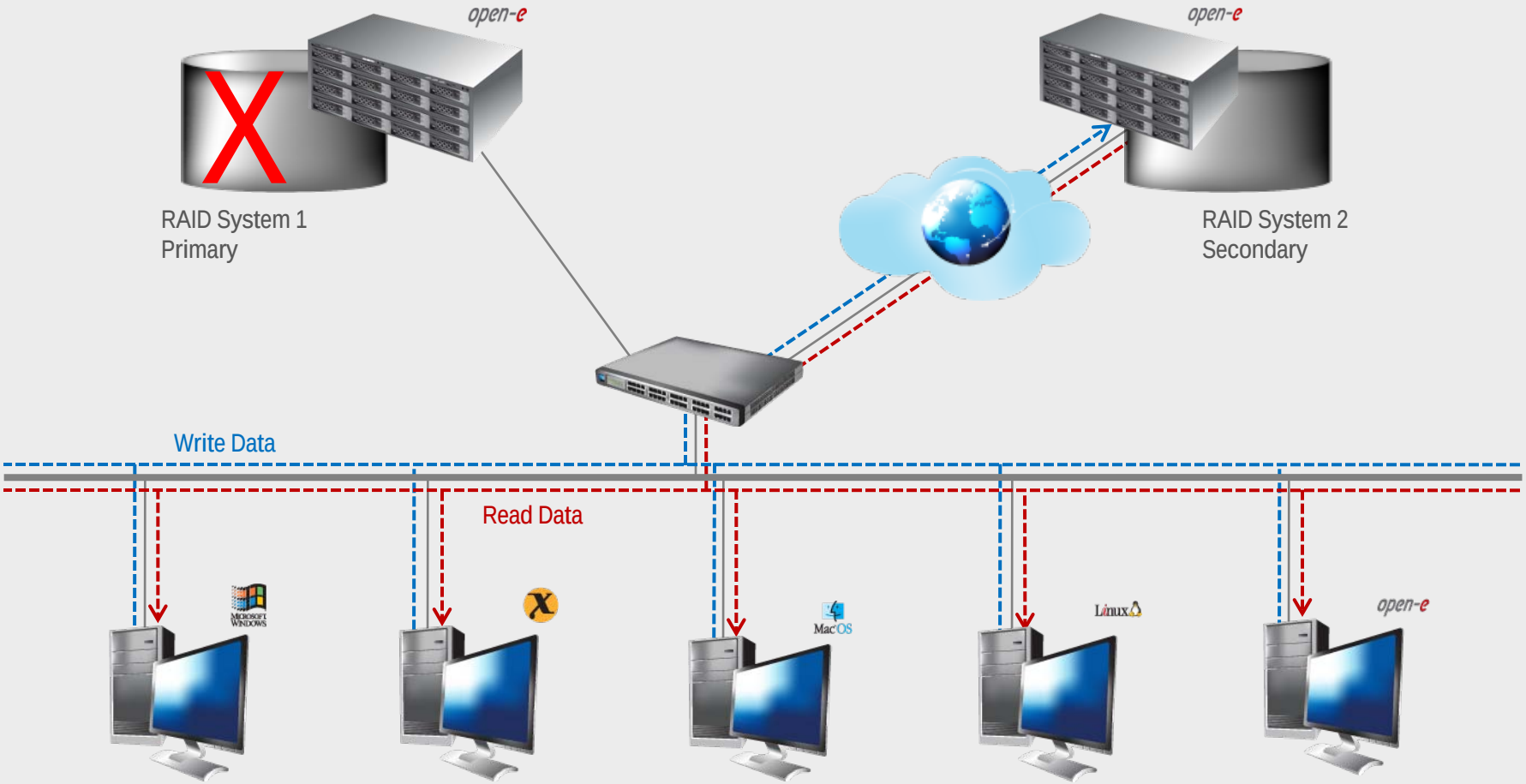
Synchronous Volume Replication over a WAN

- In the case of a raid array or disk drive error on System 1, the server will send an e-mail notification to the administrator,
- In the case of a failure of system 1, users will be notified,
- Administrator then switches users to the System 2 over the WAN.



Synchronous Volume Replication over a WAN

- After switching, replicated volume is available on System 2



Thank you!